



UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

E/CONF.39/D/158
SUMMARY

21 Nov.1962

ENGLISH
ORIGINAL : FRENCH

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Agenda Item: D.4.1

France

THE LONG-TERM PRESERVATION OF CANNED GOODS

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D.4.1

SUMMARY

The various needs and circumstances which the Army Service Corps is called upon to face mean that both in peace and war, it must store and constantly replenish a large stock of many different canned products (meat and pork products, fish in oil, cooked dishes, etc....). Occasionally, it also proves necessary to store (though for shorter periods) tinned vegetables, fruit in syrup, etc.

Although by no means complete, the Service Corps' experience in the technical preservation period for these foodstuffs may prove useful to other organisations.

I. Meat of the "corned beef" type tinned in gelatine retains its organoleptic properties more or less unchanged for 5 years; cooked meats of the "beef in gravy" type, on the other hand, undergo changes more rapidly and should be consumed within 3 years, whereas "corned beef" can be consumed and not found unpleasant even after 5 to 10 years storage.

II. Pork products (pastes and galantines) normally keep well for about five years and do not appear to go rancid. Some liver pastes, however, do not keep well.

III. Fish preserved in oil are normally found to possess very satisfactory organoleptic characteristics after 5 years; only in exceptional circumstances does the acidity of the preserving oil exceed 1 - 2%. Experiments with animals (rats) have been carried out at the Laboratories. It has been found that the protein efficiency from the point of view of growth, the digestive value coefficient and the biological value of the protides of sardines preserved in oil was unchanged after 4 - 5 years storage at a temperature of + 20° C.

Fish preserved in white wine (mackerel) cannot be kept for more than a year without some danger of changes occurring both in the container and the contents (swelling of the can, contents taste metallic and bitter). On the other hand, preservation tests carried out would seem to show that fish preserved in tomato sauce (sardines and tunny pieces) deteriorates far more slowly and can be stored for several years.

IV. For obvious reasons, the satisfactory preservation of "cooked dishes" varies according to the type of dish preserved. Normally, the period runs from 3 to 5 years, with the exception of highly aggressive dishes (e.g. sauerkraut with sausages) which really cannot be kept for more than 2 - 3 years without risk of deterioration.

V. The organoleptic features of cheeses (Gruyere, Blue, Cantal) when preserved in internally lacquered tins, disappear slowly, but these are usually still edible after four to five years storage at normal temperature, in spite of slight changes in the physico-chemical characteristics.

VI. Less favourable results are obtained with tinned vegetables which normally react unfavourably to any period of storage exceeding two years.

The same is true of fruit preserved in syrup which does not stand up well to prolonged storage and which, for this reason, is not normally kept for over a year before being consumed.

The method of tinning used in the manufacture of the containers (hot or electrolytic tinning) does not seem to affect the preservation characteristics. Internal lacquering of the cans - which is compulsory in certain cases where the advantages to be gained from this are well known (some fruits, for example) - has normally given favourable results in other cases too. However, these results were by no means constant and were dependent on the quality of the lacquers used, many of which are not sufficiently adhesive. From this point of view, the Service Corps leave the commercial firms concerned an entirely free hand in the case of tinned meats or cooked dishes, merely specifying a two year guarantee period.